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4 May 1959

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MEMORANDUM FOR: [redacted]

SUBJECT: Significance of attachment to SO Memo No. 5947, dated 14 April 1959

1. The information provided by the attachment is considered to be most interesting and useful in providing additional insight on what appears to be a sense of Soviet urgency to overcome their lag in the development of an airborne gravimeter.

2. As you know the Soviets have not been too successful in the development of an adequate land or sea gravimeter, sufficiently drift-free and consistent within accuracies required for their next phase of gravity surveying. We have recently obtained information confirming this in the fact that this Soviet inadequacy apparently has limited their development of a surface-ship instrument to the adaptation of a pendulum-type rather than a spring-type gravimeter. While such an adaptation, apparently under development in the late 1940's and used in 1951, 1952 and 1957-58 surveys, has represented an interesting advancement, it is not nearly as sophisticated an instrument for the long-range world survey requirements as are the US and West German surface-ship gravimeters. In our judgment the Soviet pendulum type would not be adaptable for airborne surveys. Although the reading period of the Soviet pendulum type has been improved from the 4-hour interval required in submarine surveys to 20-25 minutes on board ship, this must be done while the ship is at rest and provides a value only at a point. In contrast the gravimeter -- submarine, surface-ship, and airborne -- provides continuous readings that yield a profile over an extended course). Hence it is our judgment that the target outlined for the Soviet agents is to secure information on the US development of an airborne gravimeter that has been underway jointly by LaCoste and Romberg, and the USAF Cambridge Air Research Center. Not only will such an instrument represent a major break-through in greatly speeding up the gravity survey over oceans and other inaccessible areas, but it will also provide unique, direct observational data on the external gravity field of the earth obtainable only with an instrument operating in space. This will be of significant value not only to basic space research in general, but particularly to the study of the problem of the effect of gravity on missiles in flight, and the possible ultimate determination of correction factors for the more accurate placement of missiles on targets.

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3. May we suggest that these views be made known to the FBI in order that they might continue to report any further developments on this matter. It may also be of some help to them in identifying certain Soviet clandestine activities that otherwise might remain unnoticed. We should be pleased to discuss this matter in greater detail should this be desirable.

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[redacted]
Chief, Special Research Branch
Geography Division,
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